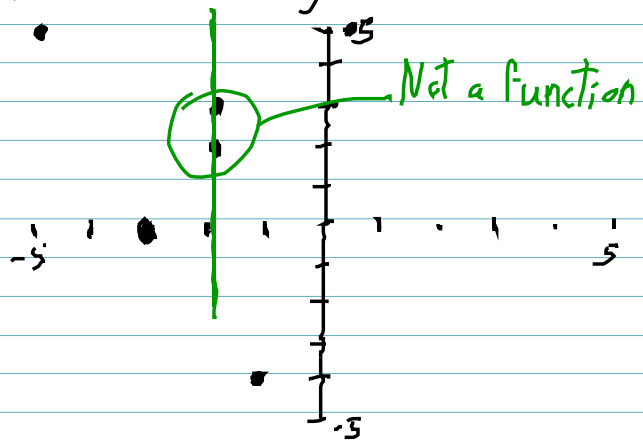
Math 0362 Practice Test 3

1) Determine if graph is a function



Not a function

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2) Given the function: $h(x) = x^2 + 2x - 3$, find following:

a) $h(-4)$

$(-4)^2 + 2(-4) - 3$

$16 - 8 - 3 = 5$

b) $h(0)$

$(0)^2 + 2(0) - 3$

$0 + 0 - 3 = -3$

c) $h(3)$

$(3)^2 + 2(3) - 3$

$9 + 6 - 3 = 12$

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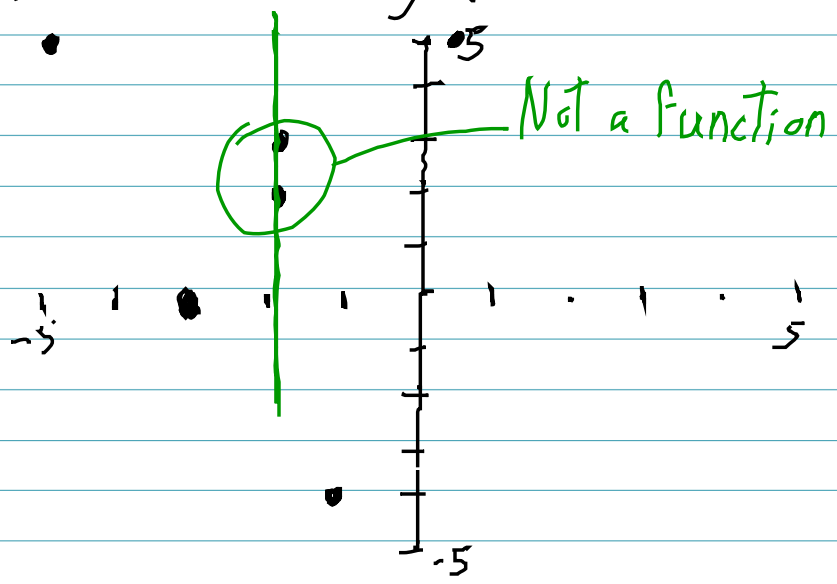

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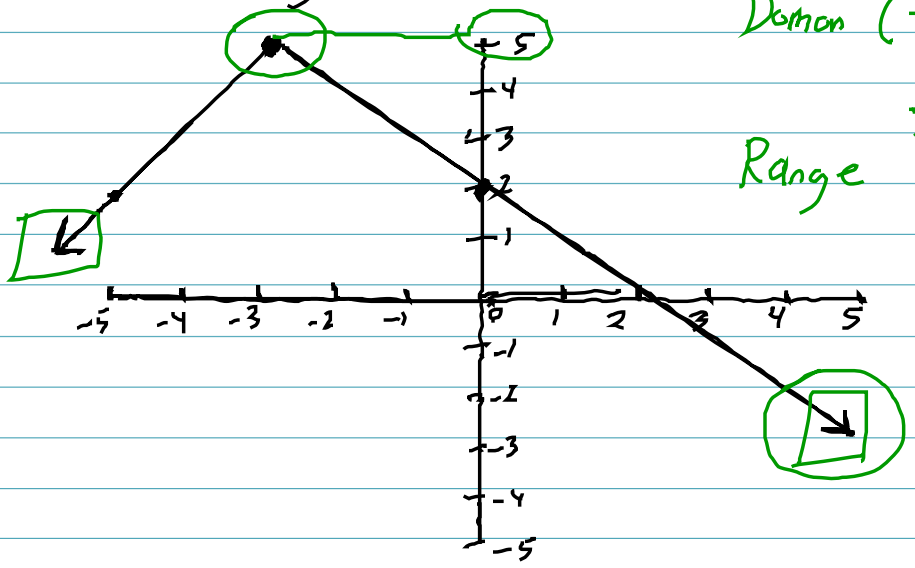
3) Find domain and range of function



Left Right

Domain $(-\infty, \infty)$

Bottom Top

Range $(-\infty, 5]$

Determine whether given ordered pair is solution of linear system

$$2x-3y=8$$
$$x-2y=6$$

4) $(-2,-4)$

$2(-2)-3(-4)=8$

$-4+12=8$

$8=8$ ✓

$-2-2(-4)=6$

$-2+8=6$

$6=6$ ✓

$(-2,-4)$ is a solution

5) $(7,2)$

$2(7)-3(2)=8$

$14-6=8$

$8=8$ ✓

$7-2(2)=6$

$7-4=6$

$3=6$ ✗

$(7,2)$ is Not a solution

Solve by graphing

6) $y - x = 5$ | $2x - 2y = -10$

ignore x

$y = 5$

ignore y

$-x = 5$

$\frac{-x}{-1} = \frac{5}{-1}$

$x = -5$

Ignore x

$-2y = -10$

$\frac{-2y}{-2} = \frac{-10}{-2}$

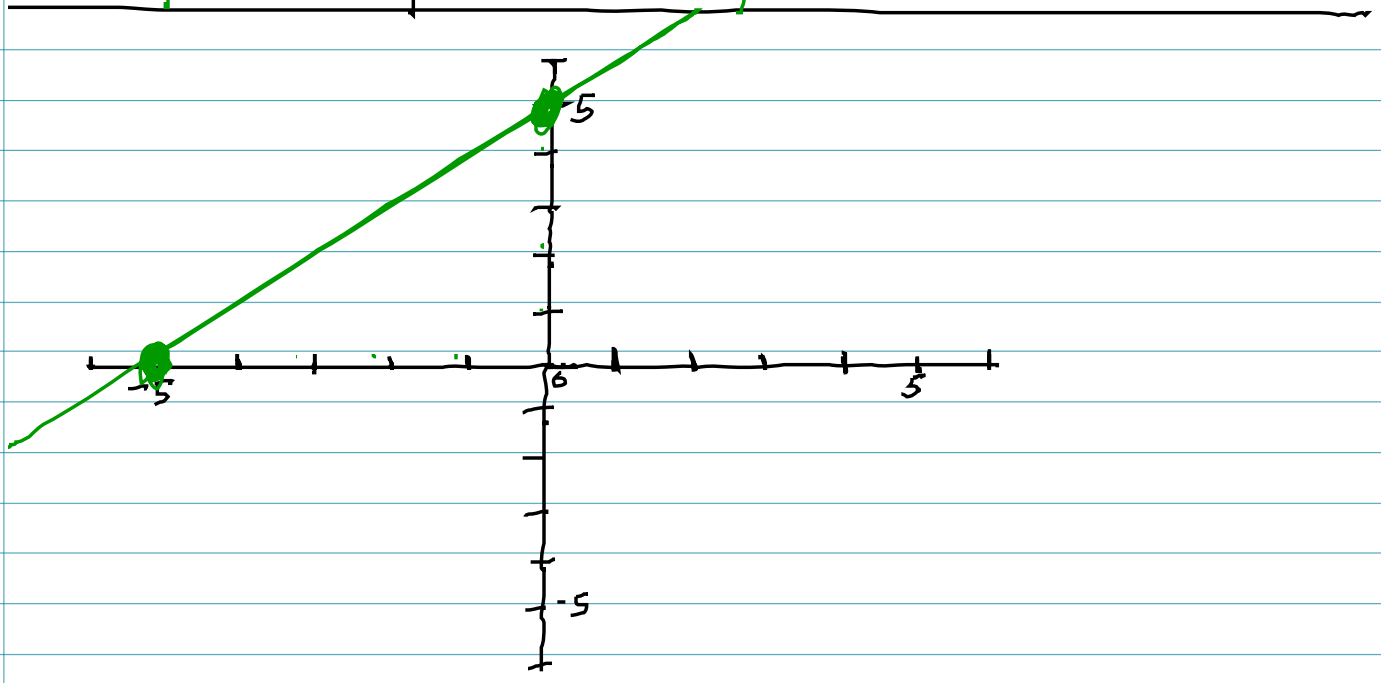
$y = 5$

Ignore y

$2x = -10$

$\frac{2x}{2} = \frac{-10}{2}$

$x = -5$



Since we have some line, there is infinite solutions

7) $x+y=8$

ignore x

$y=8$

ignore y

$x=8$

$x-y=-6$

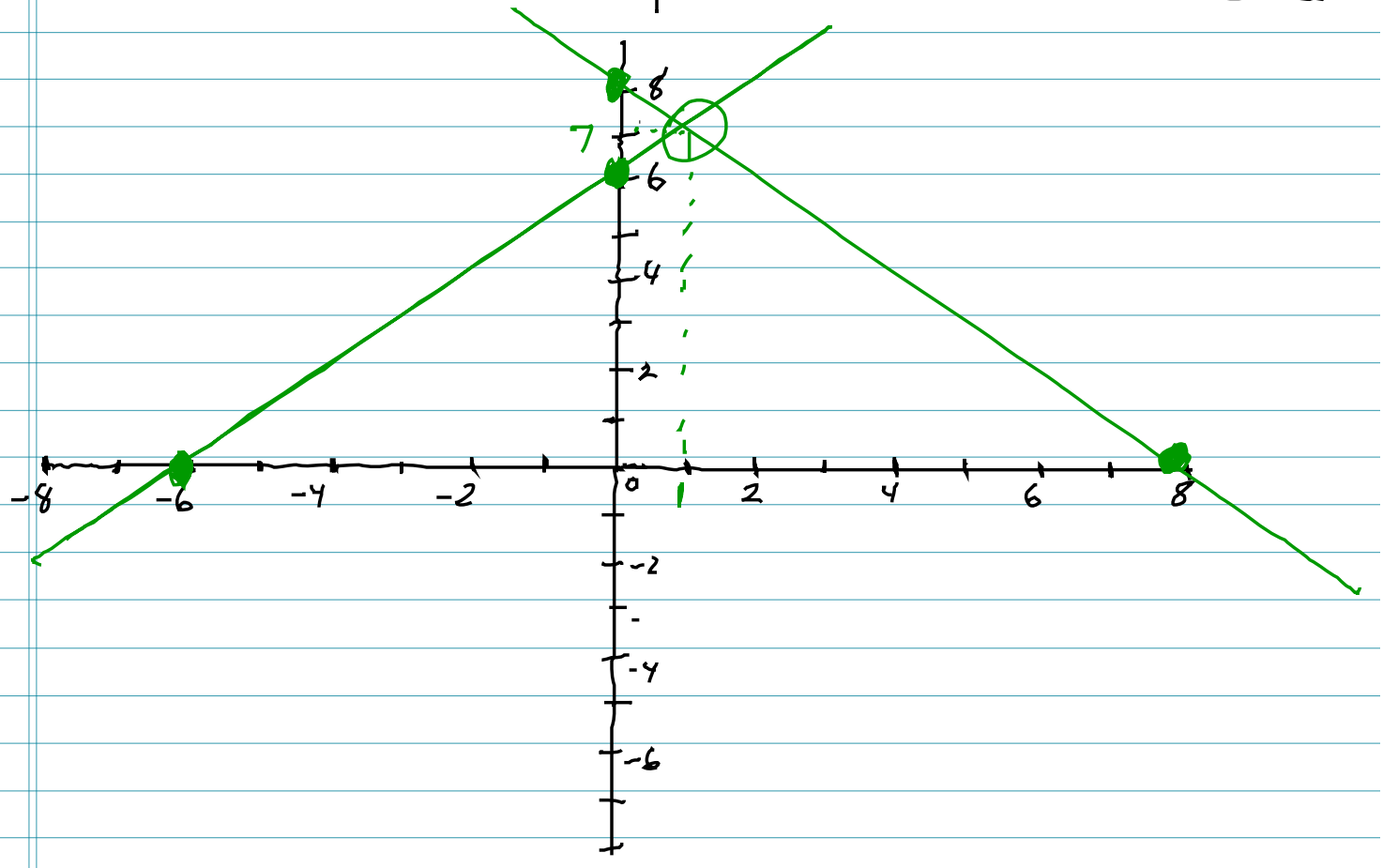
ignore x

$-y=-6$

$y=6$

ignore y

$x=-6$



solution: $(1, 7)$

8)

$x+y=2$

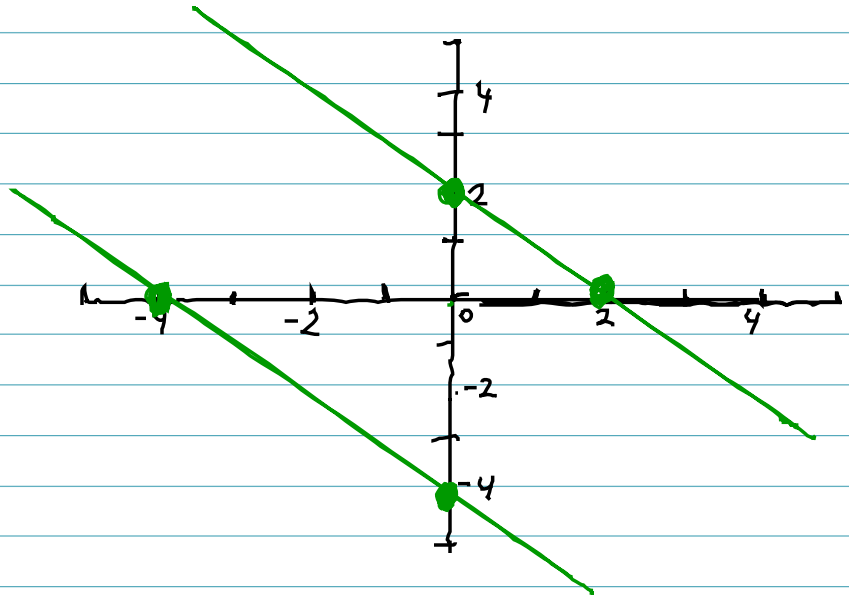
ignore x: $y=2$

ignore y: $x=2$

$x+y=-4$

ignore x: $y=-4$

ignore y: $x=-4$



Parallel lines ⇒ No solution b/c they never touch each other

9) Solve using Substitution

$3x + 2y = 22$ $\quad x = 5y - 4$

$3(5y - 4) + 2y = 22$

$15y - 12 + 2y = 22$

$17y - 12 = 22$

$+12 \quad +12$

$\frac{17y}{17} = \frac{34}{17}$

$y = 2$

$x = 5y - 4$

$x = 5(2) - 4$

$x = 10 - 4$

$x = 6$

---

10) $5x + 15y = 35$

$-15y \quad -15y$

$\frac{5x}{5} = \frac{35}{5} - \frac{15y}{5}$

$x = 7 - 3y$

$4x + 12y = 36$

$4(7 - 3y) + 12y = 36$

$28 - 12y + 12y = 36$

$28 = 36$

No Solution

Solve by addition method

11) $2x+y=4$

$-1(2x+3y=0)$

$2x+1y=4$

$-2x-3y=0$

$-2y=4$

$\frac{-2y}{-2}=\frac{4}{-2}$

$y=-2$

$2x+(-2)=4$

$2x-2=4$

$+2 \quad +2$

$\frac{2x}{2}=\frac{6}{2}$

$x=3$

$(3,-2)$

---

12) $3(4x+5y=2)$

$-4(3x-1y=11)$

$12x+15y=6$

$-12x+4y=-44$

$\frac{19y}{19}=\frac{-38}{19}$

$y=-2$

$4x+5(-2)=2$

$4x-10=2$

$+10 \quad -10$

$\frac{4x}{4}=\frac{12}{4}$

$x=3$

$(3,-2)$

---

13) $-4(3x-4y=6)$

$12x-16y=24$

$-12x+16y=-24$

$12x-16y=24$

$0=0$

When everything crosses out

answer is

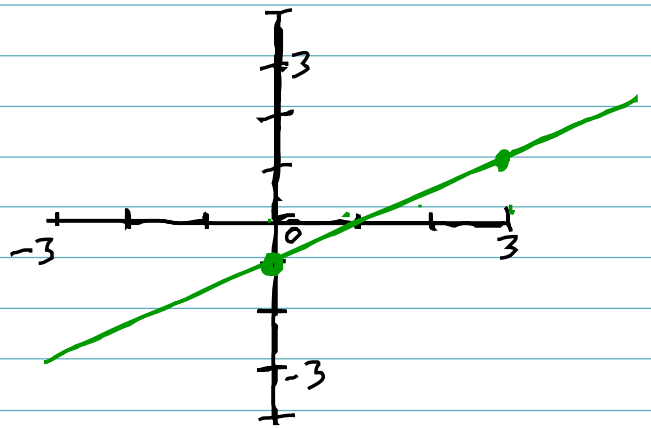
Infinte Solutions

14) Graph

$y = \frac{2}{3}x - 1$

X	Y	
0	-1	$\frac{2}{3}(0) - 1 = -1$
3	1	$\frac{2}{3}(3) - 1$ $2 - 1 = 1$

Always button #



15) Find equation with slope $m = \frac{1}{3}$ and contains point $(-3, 6)$

$y = mx + b$ $m = \frac{1}{3}$ $x = -3$ $y = 6$

Find b

$6 = \frac{1}{3}(-3) + b$

$6 = -1 + b$

$+1 \quad +1$

$7 = b$

When you know m and b, put it together.

$y = mx + b$

$y = \frac{1}{3}x + 7$

16) Find equation of line containing points

$(1,3)$ and $(3,2)$ — (x_1, y_1) and (x_2, y_2)

Find m

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{2-3}{3-1} = \frac{-1}{2}$$

$m = -\frac{1}{2}$

Find b

$y = mx + b$

$3 = -\frac{1}{2}(1) + b$

$3 = -\frac{1}{2} + b$

$+\frac{1}{2} \quad +\frac{1}{2}$

$\frac{3}{1} + \frac{1}{2}$

$\frac{6}{2} + \frac{1}{2} = \frac{7}{2} = b$

Put it all together

$y = mx + b$

$y = -\frac{1}{2}x + \frac{7}{2}$

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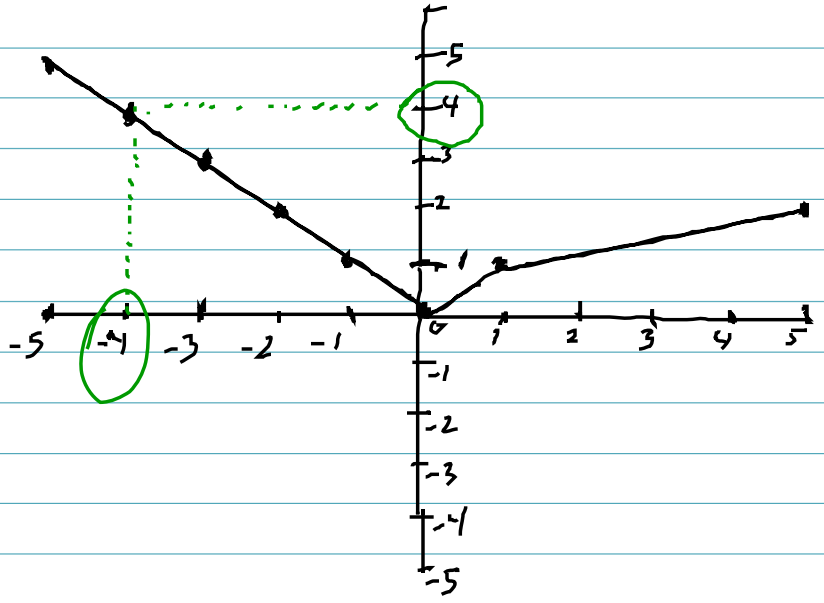
17) $f(-4) = -3$ Write as ordered pair.

$(-4, -3)$ ✓

18) Use graph to find function value

$f(-4)$



4

19) If y varies directly as x, find constant of variation if $y=6$ and $x=18$

multiply

$y = kx$ → $y = \frac{1}{3}x$

$\frac{6}{18} = \frac{k(18)}{18}$

$\frac{1}{3} = k$

20) If y varies inversely as x, find constant of variation if $y=8$ and $x=7$

divide

$y = \frac{k}{x}$ → $y = \frac{56}{x}$

$8 = \frac{k}{7}$

$56 = k$

multiply

21) Weight of ball varies directly with cube of radius.

A ball with radius of 3 weighs 5.4 pounds.

Find weight of ball with 4 inch radius.

$W = Kr^3 \longrightarrow W = 0.2r^3$

$5.4 = K(3)^3$

$\frac{5.4}{27} = \frac{K(27)}{27}$

$0.2 = K$

$W = 0.2(4)^3$

$W = 0.2(64)$

$W = 12.8$